

REMARKS/ARGUMENTS

Claims 1-14 are pending in the Application. Claims 1 and 3 are currently amended. Claims 12-14 are new. Support for the more limited % by mass ranges for monomer units (a1) and (a2) in currently amended Claims 1 and 3 and new Claims 12-13 is found in the Specification at page 8, line 18, to page 10, line 15. See especially page 9, lines 2-7, and page 10, lines 9-15, for Claims 12-13. Support for new Claim 14 is found in the Specification at pages 11-12, bridging sentence.

Support for the amendments to the Specification beginning at page 6, line 17, and beginning at page 7, line 21, are similarly found in the Specification at page 8, line 18, to page 10, line 15, especially at page 9, lines 5-7, and page 10, lines 9-12. Relabeling Example 7 at page 23, line 7, and page 24, Table 2, of the Specification, as Referential Example 1 (Ref. Ex. 1) is evident from the monomer composition for Example 7 which is described in Table 1 on page 22 of the Specification. As shown in Table 1, the improver in Example 7 comprises 25% by mass of monomer (a1) and 74% by mass of monomer (a2). Therefore, improver of Example 7 is not directed to currently claimed subject matter.

No new matter is added.

Objection to Claim 3

The Examiner objected to the typographical error “99.5%by mass” in previously presented Claim 3. Office Action dated April 8, 2009 (OA), page 2. Applicant has corrected the error in the current amendment to Claim 3. Therefore, the Examiner’s objection should be moot.

Rejections to Claims 1-2 and 4-9 under 35 U.S.C. 102(b) over Fischer

Previously presented Claims 1-2 and 4-9 were rejected under 35 U.S.C. 102(b) as anticipated by Fischer (U.S. Patent 4,906,696, issued March 6, 1990)(OA, p. 2) The

rejection should be withdrawn because it does not apply to Applicant's currently amended claims.

First, the Examiner points to Fischer's Examples 10-11 (Fischer, col. 10, lines 15-48) and Abstract. We also considered Example 12 (Fischer, col. 10, lines 48-62). In each of Examples 10-12, Fischer describes a polymer prepared by polymerizing 60 parts by weight MMA (methyl methacrylate), 20 parts α -MS (α -methylstyrene), and 20 parts PhMA (phenyl methacrylate)(Example 10); 55 parts by weight MMA (methyl methacrylate), 20 parts α -MS (α -methylstyrene), 20 parts PhMA (phenyl methacrylate), and 5 parts CHA (cyclohexyl acrylate)(Example 11); and 45 parts by weight MMA (methyl methacrylate), 10 parts α -MS (α -methylstyrene), and 45 parts PhMA (phenyl methacrylate)(Example 12). In each example, the proportion of aromatic vinyl monomer (a1) is no more than 20% by mass. In all of Applicant's currently amended and new claims, the improver polymer comprises no less than 50% by mass of aromatic vinyl monomer (a1). Accordingly, no improver or improved composition, or molded article made therefrom which Applicant currently claims is described by Fischer.

Moreover, no transparent thermoplastic polymer Fischer broadly contemplates or reasonably suggests comprises more than 40 wt% of the optional α,β -unsaturated monomers (Fischer: Abstract; col. 3, ll. 40-66; col. 4, ll. 27-41; col. 5, ll. 18-50; and col. 6, ll. 25-35). Fischer defines α,β -unsaturated monomers as including aromatic vinyl monomers such as styrene and α -methylstyrene (Fischer, col. 4, ll. 27-30; col. 6, ll. 29-35). Applicant's currently claimed improver polymer (A) must comprise at least 50% by mass of aromatic vinyl monomer (a1).

Accordingly, Fischer neither anticipates nor reasonably suggests an improver polymer or improved composition Applicant currently claims. Accordingly, the previously applied

anticipation rejections do not apply to Applicant's currently amended claims. Therefore, the rejections should be withdrawn.

Rejections of Claims 10-11 under 35 U.S.C. 103 over Fischer in view of Okazaki

Previously presented Claims 10-11 were rejected under 35 U.S.C. 103 over Fischer in view of Okazaki (JP 11-181197, published July 6, 1999)(OA, p. 4). As did the Examiner, we refer to the English translation of Okazaki relied upon by the Examiner. The rejection is not applicable to current dependent Claims 10-11 and should be withdrawn.

The Examiner finds that Okazaki discloses polycarbonate compositions including a flowability improver comprising an aromatic vinyl monomer and other monomers having polar groups. However, Okazaki is not relied upon for any purpose other than to show that it would have been prima facie obvious to a person having ordinary skill in the art to injection mold the improved polycarbonate compositions Fischer describes into variously shaped transparent articles such as automobile parts and electrical parts such as lamp covers because the molded forms made from Fischer's improved polycarbonate compositions are said to have excellent transparency and mechanical strength. Whether or not it would have been prima facie obvious to injection mold Fischer's polycarbonate compositions into automobile or electrical parts in view of Okazaki's teaching is immaterial to the patentability of the improver or improved compositions Applicant currently claims. No improver polymer or composition improved therewith that Applicant currently claims having at least 50% by mass of an aromatic vinyl monomer is described or reasonably suggested by Fischer. Accordingly, the Examiner's rejection of Claims 10-11 which indirectly depend on currently amended Claim 1 should be withdrawn.

While Okazaki discloses a flowability improver for polycarbonates, and the improver is a polymer formed from a monomer composition comprising at least 50% by weight of an aromatic vinyl monomer and a polar group-containing monomer [0009-0018], the polar

group-containing monomer Okazaki employs is not phenyl or substituted phenyl (meth)acrylate. Moreover, the polycarbonate compositions of Production Examples 1-6 in Applicant's Table 2 (Spec., p. 24) which were improved by Applicant's claimed improvers including 60-80% by mass of styrene and 20-39% by mass of PhMA (see the corresponding improver compositions in Applicant's Table 1 at page 22 of the Specification) show far superior melt flowability and chemical resistance than comparative compositions comprising more than 50% by mass of styrene but no phenyl or substituted phenyl (meth)acrylate monomer (Table 2, Comparative Example 2) and comparative compositions comprising less than 50% by mass of styrene and more than 50% by mass of phenyl or substituted phenyl (meth)acrylate (Table 2, Referential Example 1). Therefore, Applicant submits that the superior results reported in the supporting Specification for Applicant's claimed improvers reasonably establishes that the flowability improvers Applicant currently claims are unobvious and patentable over the combined teachings of Fischer and Okazaki.

Rejection of Claim 3 under 35 U.S.C. 103 over Sato in view of Fischer

Previously presented Claim 3 was rejected under 35 U.S.C. 103 over Sato (JP 01-115914, published June 9, 1989) in view of Fischer. As did the Examiner, we refer to the English translation of Sato relied upon by the Examiner. The rejection should be withdrawn.

Sato describes a resin composition prepared by copolymerizing a monomeric composition comprising 20-65 wt% of a aromatic vinyl compound, 15-75 wt% of a phenyl methacrylate, and 5-30 wt% of a vinyl cyanide. While the weight average molecular weight of the resin is not indicated, Sato teaches that the resin produced has excellent weather resistance, oil resistance, moisture resistance and optical properties. Moreover, the resin produced has a high degree of polymerization and is therefore "used as a molding material" (Sato, p. 6, 2nd ¶). Sato states (Sato, p. 8, 1st ¶):

The polymer obtained was . . . trial-molded by a small-scale biaxial extruder . . . and palletized [sic]. The pellet obtained was molded at 230°C by a small-scale injection molding machine to prepare a specimen with a thickness of 3 mm.

Sato further teaches (Sato, p.13, final ¶):

[The methacrylic resin of the present invention] can be used in a broad field, for example, parts such as automobiles, electric and electronic equipments, and OA equipments, mirrors, miscellaneous goods, etc.

It should be apparent from Sato's disclosure that the average molecular weight of Sato's methacrylic resin is greater than the 5000 to 150,000 Applicant's claims require. As such, Sato's resin is unsuitable for use as a flowability improver for engineering plastics such as polycarbonates. In fact, persons having ordinary skill in the art would not be inclined to use Sato's injection moldable resin to improve the flowability of polycarbonates during injection molding because Sato's resins appear to have the same or substantially the same properties as the injection moldable polycarbonates and the same apparent use for producing automobile and electrical parts. Persons having ordinary skill in the art reasonably would not have expected that Sato's resin had a sufficiently low average molecular weight for use as a flowability improver for injection moldable polycarbonates having substantially the same properties. Sato's injection moldable resin appears to be unsuitable for use as a flowability improver for other injection moldable resins. In addition, the excellent weather, water and oil resistance of Sato's resin would have led persons having ordinary skill in the art to question whether Sato's resin would be compatible with other injection moldable engineering thermoplastics.

The Examiner recognizes Sato's deficiencies, especially the unspecified average molecular weight (OA, p. 5, 2nd ¶). Therefore, the Examiner relies upon Fischer's teaching that compatibility depends upon the degree of polymerization and can be improved by controlling the molecular weight (Fischer, col. 6, ll. 48-66) to suggest that persons having ordinary skill in the art would have controlled the molecular weight of Sato's resin for use as

flowability improvers (OA, p. 5). The basic problems with the Examiner's conclusion are (1) Sato does not teach or reasonably suggest that its methacrylic resin is compatible with other injectable resins such as polycarbonates, (2) Sato does not teach or reasonably suggest that its methacrylic resin can be made compatible with other injectable resins such as polycarbonates, (3) Sato does not suggest that a reduction in the average molecular weight of its resins would make them useful as flowability improvers for injection moldable resins such as polycarbonates, (4) Fischer does not teach or reasonably suggest that Sato's resins prepared from a monomer composition including more than 40% by mass of an aromatic vinyl monomer would be useful or could be made useful as flowability improvers for other injection moldable resins, and (5) Applicant's Examples 1-6, Referential Example 1, and Comparative Examples show that injection moldable resins including polymers prepared from monomer compositions comprising at least 50% by mass of an aromatic vinyl monomer and at most 50% by mass of a phenyl or substituted phenyl (meth)acrylate have far superior melt flowability and chemical resistance than injection moldable resins including polymers prepared from monomer compositions comprising less than 50% by mass of an aromatic vinyl monomer and more than 50% by mass of a phenyl or substituted phenyl (meth)acrylate. The improved results are entirely unexpected.

Sato sees no distinction whatsoever between any of the polymers formed from monomer compositions including 20-65 wt% of aromatic vinyl monomer and 15-75 wt% of phenyl methacrylate. Moreover, Fischer would have led persons having ordinary skill in the art to believe that polymers formed from monomer compositions including more than 40 wt% of aromatic vinyl monomer would not be useful for improving the flow characteristics of injection moldable compositions. Contrary to the Examiner's conclusions, persons having ordinary skill in the art reasonably would not have been led to the improver or improved plastics Applicant claims with any reasonable expectation of success. A conclusion of

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obviousness under 35 U.S.C. 103 requires nothing less. *In re O'Farrell*, 853 F.2d 894, 903 (Fed. Cir. 1988).

For the reasons stated herein, Applicant's claims are patentable over the applied prior art and in condition for allowance. Early Notice of Allowance is earnestly requested.

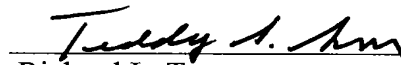
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